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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/520,122	01/12/2006	Jindrich Vosahlo	5724T-000006/NP	9690
27572 7590 12/23/2008 HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303			EXAMINER BANH, DAVID H	
			ART UNIT 2854	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/520,122	Applicant(s) VOSAHLO, JINDRICH	
	Examiner DAVID BANH	Art Unit 2854	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-6,10,12,14,15,25,28,29,33,36,38,40,42,47,50,68,76,78 and 81-83 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Continuation of Disposition of Claims: Claims pending in the application are 1,3-6,10,12,14,15,25,28,29,33,36,38,40,42,47,50,68,76,78 and 81-83.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1, 3-6, 10, 12, 14, 15, 25, 28, 29, 33, 36, 38, 40, 42, 47, 50, 68, 76, 78 and 81-82 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3, 5-6, 10, 12, 25, 28, 29, 38, 40, 42, 47, 81 and 83 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tourle (GB 2,338,212).

For claim 1: Tourle teaches a method of ink jet printing comprising depositing a first pass of ink using radiation curable ink on the area (page 8, lines 30-31), partially curing the ink (page 9, lines 5-8), depositing a second pass of ink on the area (page 9, lines 11-13) and finally fully curing all the passes of ink (page 9, lines 20-25). Tourle teaches the ink to be radiation curable ink (page 9, line 23). Tourle does not teach that the exposed surface of the ink is in non-solidified form. However, Tourle does teach that the flash curing process is quick and only leaves the ink just sufficiently cured to be resistant to travel (page 9, line 9). Thus it would be obvious to one of ordinary skill in the art to balance the time cost and the amount of curing to leave the ink in gel-like form which would make it resistant to travel, but save time and maintain printing speed.

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For claim 3: In view of Tourle, it would be obvious to one of ordinary skill in the art to leave the ink in a gel form because it would be resistant to the travel, but require less curing time.

For claim 5: In view of Tourle, it would be obvious to one of ordinary skill in the art to affect a cure on the ink nearest the substrate to prevent the ink droplets from traveling.

For claim 6: Tourle teaches that the ink is stable in that it is resistant to travel and that this process occurs quickly, in the matter of a few minutes (page 9, lines 5-8, flash curing).

For claim 10: Tourle teaches that the step of partial curing is done by a first device **16** and the full curing by a second device **10** (see page 9, lines 10-25).

For claim 12: Tourle teaches that the ink is ultraviolet curable ink (page 9, line 23).

For claim 25: As demonstrated in claim 3, it would be obvious to one of ordinary skill in the art in view of Tourle to leave the ink in a gel-like form. In this form, the ink would be easily displaceable by rubbing.

For claim 28: Tourle shows a single ink head **12** (Figure 2), printing different colors (page 9, lines 9-11), which would be layered on top of one another to generate an image.

Thus, the ink of subsequent layers would wet the first layer.

For claim 29: Tourle teaches a method of printing an area of a substrate with a plurality of passes (page 8, lines 30-31 and page 9, lines 11-13), including applying a first pass of ink (page 8 line 30-31), substantially immobilizing the ink of the first pass in a first curing step (page 9, lines 5-8), the immobilized ink is such that the second pass is

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applied on top of the first pass (see Figure 2, ink head **12** will deposit layers of different colors on one another) and thus the second pass will wet the first pass.

For claim 38: Tourle teaches a print head **12** arranged for depositing a first pass of ink (page 8, lines 30-31) using radiation curable ink (page 9, line 23) on the area, means for partially curing the ink **16** deposited on the area, a print head **12** for depositing a second layer of ink and means for substantially fully curing **10** the ink on the area. While Tourle does not explicitly teach that the ink is in non-solidified form, Tourle does teach that the flash curing process is quick and only leaves the ink just sufficiently cured to be resistant to travel (page 9, line 9). Thus it would be obvious to one of ordinary skill in the art to balance the time cost and the amount of curing to leave the ink in gel-like form which would make it resistant to travel, but save time and maintain printing speed.

For claim 40: In view of Tourle, it would be obvious to one of ordinary skill in the art to leave the ink in a gel form because it would be resistant to the travel, but require less curing time.

For claim 42: In view of Tourle, it would be obvious to one of ordinary skill in the art to affect a cure on the ink nearest the substrate to prevent the ink droplets from traveling.

For claim 47: Tourle teaches first **16** and second curing means **10** to be separate (see abstract, the substrate is removed from the plate before subjected to second means **10**).

For claim 81: Tourle teaches that the cure is sufficient to make the ink resistant to movement (page 9, line 9). It would have been obvious to one of ordinary skill in the art at the time the invention was to vary the level of the first partial cure, particularly

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decreasing it to increase the rate of printing, in order to maximize the printing speed while allowing for sufficient curing of the ink to prevent movement of the ink.

For claim 83: Tourle shows a single ink head **12** (Figure 2), printing different colors (page 9, lines 9-11), which would be layered on top of one another to generate an image.

4. Claims 4 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tourle (GB 2,338,212) as applied to claim 1 above, and further in view of Suzuki et al. (JP 2003-285423)

Tourle teaches all of the limitations of claims 4 and 15 as found in parent claim 1.

Tourle does not teach the provision of an oxygen inhibited environment. However, Suzuki et al. teaches the provision of an inerting gas to produce a low oxygen environment for UV curable inks (see translated abstract, provision of inert gas into chamber **13b** and UV light source **5**). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide inert gas to produce a low oxygen environment to reduce the spreading of ink drops and produce a cleaner print.

5. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tourle (GB 2,338,212) as applied to claim 1 above, and further in view of Ohymana et al.

Tourle teaches all of the limitations of claim 14 as found in parent claim 1. Tourle is silent as to the wavelength of the light used to cure the ink. However, Ohymana et al. teaches that peak wavelengths between 280 nm and 400 nm are optimal for curing some inks and paints. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a light source with a peak wavelength within this range, particularly of 390 nm to cure the ink.

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6. Claim 33, 76 and 78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tourle (GB 2,338,212) as applied to claims 1 and 38 above respectively, and further in view of (US Patent 6,092,890) and Codos (US PG Pub 2002/0044188).

For claim 33: Tourle teaches all of the limitations of claim 33 as found in parent claim 1 above. It does not teach a carriage comprising a radiating means and one or more print heads. However, Wen et al. teaches a emitting the ink using a printer carriage **45** having one or more print heads **31-34**. Wen et al. teaches a radiation source **50** capable of affecting a partial cure and a full cure. Wen et al. teaches that a radiation source **50** disposed on the holder **45** to move with the print heads **31-34** (column 2, lines 44-46). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the printer carriage and print heads of Wen et al. along with first radiation source of Tourle with one disposed on the carriage to move with the print heads to affect on-the-fly printing.

The combination of Tourle and Wen et al. does not teach a second device separate from one another for fully curing the ink, nor does it teach the device to be movable relative to the print heads. However, Codos et al. teaches a UV curing station **24** comprising a radiation source **23** that moves independently of a print head **30**. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a radiation source independent of the print heads to produce a full cure downstream of the printing and partial curing for the purpose of being able to manage the curing without affecting the printing process.

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For claim 76: Tourle teaches all of the limitations of claim 76 as found in parent claim 38 above. It does not teach a carriage comprising a radiating means and one or more print heads. However, Wen et al. teaches a emitting the ink using a printer carriage **45** having one or more print heads **31-34**. Wen et al. teaches a radiation source **50** capable of affecting a partial cure and a full cure. Wen et al. teaches that a radiation source **50** disposed on the holder **45** to move with the print heads **31-34** (column 2, lines 44-46). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the printer carriage and print heads of Wen et al. along with first radiation source of Tourle with one disposed on the carriage to move with the print heads to affect on-the-fly printing.

The combination does not teach that the second curing means is movable. However, Codos et al. teaches a UV curing station **24** comprising a radiation source **23** that moves independently of a print head **30**. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a radiation source independent of the print heads to produce a full cure downstream of the printing and partial curing for the purpose of being able to manage the curing without affecting the printing process.

For claim 78: Wen et al. teaches a beam **54** movable relative to the substrate **80**, the printer carriage **45** adapted to move on the beam via motors **71** as well as with the beam. Codos et al. teaches a separate curing station that moves independently and thus would be independent of the beam **54**.

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7. Claims 36 and 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tourle (GB 2,338,212) as applied to claims 1 and 38 above, and further in view of Nakamura (US Patent 6,129,464).

Tourle teaches all of the limitations of claims 36 and 68 as found in parent claims 1 and 38. Tourle does not teach a light emitting diode emitting radiation toward the ink. However, Nakamura teaches a light emitting diode emitting radiation toward the ink (column 4, lines 45-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a light emitting diode to increase the energy efficiency of the apparatus.

8. Claims 50 and 82 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tourle (GB 2,338,212) as applied to claims 38 and 81 above, and further in view of MacQueen (US PG Pub 2003/0129369A1).

Tourle teaches all of the limitations of claims 50 and 82 as found in parent claims 38 and 81. Tourle does not teach that the partial curing is varied so as to vary the level of gloss of the printed ink. However, MacQueen teaches a change in the curing to affect the gloss of the ink (page 13, paragraph 104). It would be obvious combine the changes in partial curing taught by MacQueen to change the level of the gloss of the ink for the purpose of producing more even and seemly printed images.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID BANH whose telephone number is (571)270-3851. The examiner can normally be reached on M-Th 9:30AM-8PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571)272-2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DHB
December 23, 2008

/Daniel J. Colilla/
Primary Examiner
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